No. 990 **19 September 2008**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Task Team for

Electronics

registered by Organising Field 10, Physical, Mathematical, Computer and Life Sciences, publishes the following Qualification and Unit Standards for public comment.

This notice contains the title, field, sub-field, NQF level, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and ***no later than 22 October 2008.*** All correspondence should be marked **Standards Setting – SGB for Electronics** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D. Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
e-mail: dmphuthing@saqa.org.za

DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
Further Education and Training Certificate: Electronics

SAQA QUAL ID	*QUALIFICATION TITLE*		
63849	Further Education and Training Certificate: Electronics		
ORIGINATOR		*PROVIDER*	
SGB Electronics			
QUALIFICATION TYPE	*FIELD*	*SUBFIELD*	
Further Ed and Training Cert	10 - Physical, Mathematical, Computer and Life Sciences	Information Technology and Computer Sciences	
ABET BAND	*MINIMUM CREDITS*	*NQF LEVEL*	*QUAL CLASS*
Undefined	122	Level 4	Regular-Unit Stds Based

This qualification does not replace any other qualification and is not replaced by another qualification.

PURPOSE AND RATIONALE OF THE QUALIFICATION
Purpose:

This Qualification is intended for persons who are working or intending to study in the electronics field as Electronics Technicians. Learners accessing this Qualification will be provided with knowledge, skills and attitudes that will enable them to diagnose faults, repair and maintain electronics equipment. Learners will be able to interpret electronic circuits in order to do component level repairs. This Qualification comprise of Unit Standards that will serve as the building blocks towards progression to a NQF Level 5 Qualification in Electronics as part of career advancement.

It will also provide opportunities for those persons who do not have formal education in electronics currently working in the field of electronics for formal recognition of work experience through Recognition of Prior Learning.

Rationale:

Currently the electronics industry is proliferated with individuals who are trained on the job without formal Qualification. Hence the need for a formal Qualification at this level that is targeted for people who wish to join the electronics field or those that are working as general operators performing duties related to fault-finding, repair and maintenance of electronic equipment.

The general perception in the electronics field is that most general operators lack the necessary knowledge and technical skills to meet the global trends regarding repairing and maintaining of newly introduced electronic equipment due to the growing supply of advanced technology competencies that will enable such individuals to perform quality repair and maintenance work. Thus this Qualification will provide learners with the theoretical and practical experience related to electronic environment in order to satisfy client's needs and expectations.

Electronics plays an important role in the national economy in that the majority of industries in the country use technology in order to be productive to sustain economic growth. Therefore, this Qualification will create employment opportunities for general operators to deal with electronics

related matters. The Qualification represents the work based needs of employers within the electronics industry in order to develop a pool of qualified electronics operators who progress through learning towards a Qualification as Chief Engineering Technicians at NQF Level 6. This Qualification will facilitate articulation to other Qualifications which include amongst others, mechatronics and autotronics thus facilitating mobility and personal growth within the electronics field and improve productivity in general.

RECOGNIZE PREVIOUS LEARNING?
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LEARNING ASSUMED IN PLACE
Learners are assumed to be competent in:

> Communication skills at NQF Level 3, or equivalent.
> Mathematics at NQF Level 3, or equivalent.
> Computer literacy at NQF Level 3, or equivalent.

Access to the Qualification:

This Qualification is open to learners who have achieved a Qualification at NQF Level 3 or equivalent. Learners who demonstrated competence at NQF Level 3 through recognition of prior learning can also access this Qualification.

Recognition of Prior Learning (RPL):

This Qualification can be achieved wholly or in part through recognition of prior learning. Learners able to demonstrate competency through the formative and summative assessment processes attached to this Qualification will receive recognition of prior learning. It is assumed that candidates may have been performing duties that reflect competencies contained in this Qualification at the workplace any formal Qualification.

QUALIFICATION RULES
The Qualification consists of a Fundamental, a Core and an Elective Component.

To be awarded the Qualification learners are required to obtain a minimum of 122 credits as detailed below.

Fundamental Component:

The Fundamental Component consists of Unit Standards in:

> Mathematical Literacy at NQF Level 4 to the value of 16 credits.
> Communication at NQF Level 4 in a First South African Language to the value of 20 credits.
> Communication in a Second South African Language at NQF Level 3 to the value of 20 credits.

It is compulsory therefore for learners to do Communication in two different South African languages, one at NQF Level 4 and the other at NQF Level 3.

All Unit Standards in the Fundamental Component are compulsory.

Core Component:

The Core Component consists of Unit Standards to the value of 56 credits all of which are compulsory.

Elective Component:

The Elective Component consists of a number of specializations each with its own set of Unit Standards. Learners are to choose a specialization area and must choose Elective Unit Standards to the value of 10 credits from the Unit standards listed under that specialization so as to attain a minimum of 122 credits.

Electrical Cluster:

> ID 115242: Draw and interpret electrical diagram.
> ID 119256: Inspect and test electrical circuit.
> ID 115245: Fabricate aircraft electrical harnesses and looms.
> ID 14057: Demonstrate knowledge and understanding of electrical systems and related concepts.

Mechanical Cluster:

> ID 244663: Conduct advanced tests on electro-mechanical components.

Electronic Cluster:

> ID 259163: Use software to design and simulate electronics circuits.
> ID 120228: Demonstrate an understanding of the process of design.

Telecommunication Cluster:

> ID 246680: Demonstrate an understanding of Telecommunications Transport concepts and principles.
> ID 246665: Perform operational activities on digital microwave radio systems.
> ID 246670: Demonstrate an understanding of the value added services platforms used in a telecommunications environment.
> ID 246656: Demonstrate an understanding of the basic equipment and components used in a telecommunications environment.

Automotive Cluster:

> ID 12229: Fit and wire up auxiliary auto-electrical equipment.
> ID 259144: Perform industrial repair inspections.

Generic Cluster:

> ID 9532: Demonstrate basic knowledge of computers.
> ID 117499: Demonstrate entrepreneurial competence.
> ID 114598: Demonstrate an understanding of entrepreneurial profile.
> ID 259138: Apply soldering techniques for thru-hole and surface mount technologies.

EXIT LEVEL OUTCOMES

1. Communicate in a variety of ways to achieve personal and workplace objectives.

2. Apply mathematics and physics principles to determine the specific values in electronics circuits.

3. Operate electronics equipment and instruments.

4. Apply knowledge and understanding of the principles and concepts of electronics circuits.

5. Rework and repair electronic circuits and systems.

6. Demonstrate entrepreneurial skills in the electronics environment.

Critical Cross-Field Outcomes (CCFOs):

This Qualification promotes, in particular, the following Critical Cross-Field Outcomes:

Unit standard CCFO Identifying:

> Identifying and solving problems related to damages and malfunctioning of the electronics equipment by using relevant test instruments for repair purposes in order meet the Occupational Health and Safety regulations.

Unit standard CCFO Working:

> Working effectively with others by coordinating activities pertaining to the repair work and when referring repaired equipment for quality assurance purposes.

Unit standard CCFO Organising:

> Planning and preparing oneself by organising time and resources needed to be used for repairing electronic equipment.

Unit Standard CCFO Science:

> Using science and technology effectively and critically, showing responsibility towards the environment and others by understanding the role of technology in society and using technology appropriately to retrieve, manage information and solve problems as well as facilitating communication.

Unit standard CCFO Understanding the world as a set of related systems:

> Recognise that problem-solving contexts do not exist in isolation by using electrical, mechanical and electronics knowledge and skills to repair electronic equipment.

ASSOCIATED ASSESSMENT CRITERIA
Associated Assessment Criteria for Exit Level Outcome 1:

1.1 Verbal and non-verbal communication skills are applied when interacting with team members, supervisors and clients in the working environment.
1.2 The role of feedback is explained in terms of its effect on the team members and the client.

Associated Assessment Criteria for Exit Level Outcome 2:

2.1 Calculations are performed in order to determine specific unknown values.
2.2 Laws of Physics are applied in order to determine specific values in electronics circuits.

Associated Assessment Criteria for Exit Level Outcome 3:

3.1 Different equipments are identified and explained in term their uses for measuring, power supply and signal injection.